ATTACHMENT F –to Land Use Committee Report
Water Quality

Many entities monitor water quality in the county area. Cities monitor surface waters near the treatment plants; the university research station on Flathead Lake monitors the lake and associated water bodies. The U.S. Geological Survey also monitors water quality and an example of the plan they have for the Flathead area follows.

REVISED SCOPE OF WORK

USGS monitoring of water quality and streamflow in the upper Flathead River basin (February-September 2007)

Prepared by the U.S. Geological Survey
May 2007

This document describes a revised scope of work that adds sampling tasks to the original monitoring plan prepared in January 2007 by the U.S. Geological Survey (USGS), in cooperation with the Montana Department of Environmental Quality (DEQ). The period of the current Joint Funding Agreement (February-June 2007) is also being extended through the end of Water Year 2007 (February - September 2007). The agreement under which work is currently being performed will be amended to include the costs of the additional tasks and the new end date.

The background, objectives, constituents, and operational aspects of the monitoring program are described in detail in the January 2007 Scope of Work. The sampling done as part of this program will be coordinated to the extent possible with other sampling programs to minimize cost. The following sections summarize the key components of the monitoring program and the additional tasks.

Sampling Locations

The sampling locations in the upper Flathead River basin are:

CURRENT NETWORK
Flathead River (North Fork) near Flathead, British Columbia (12355000)
North Fork Flathead River near Columbia Falls (12355500)
Middle Fork Flathead River near West Glacier (12358500)
South Fork Flathead River near Columbia Falls (12362500)
Stillwater River at Lawrence Park, at Kalispell (12365700)
Whitefish River near mouth, at Kalispell (12366080)
Ashley Creek at Kalispell (12367800)

Flathead River above Flathead Lake, near Bigfork (12369000)

****NEW SITE TO BE ADDED****
Swan River near Ferndale (station number to be established)

A new site on the Swan River below the town of Ferndale and above the pool formed by the dam at Bigfork will be established for periodic sampling. All sites, except the Swan River near Ferndale, are USGS streamflow-gaging stations.

Sample Collection

All samples will include field determinations of streamflow, water temperature, specific conductance, pH, and dissolved oxygen. Samples will be depth and width-integrated and collected using standard USGS sampling methods, which are described in the USGS National Field Manual (USGS, variously dated; http://pubs.water.usgs.gov/twri9A). Quality assurance for water-quality activities in the USGS Montana Water Science Center are described in Lambing (2006; http://pubs.water.usgs.gov/of/2006/1275).

The revised sampling plan adds 2 sample collections during July and August 2007 at the original 8 sites, and adds 4 sample collections during June-August 2007 at the new site on the Swan River. A total of 8 samples will be collected at the original sites during February–September 2007; a total of 4 samples will be collected at the new site on the Swan River during June-September 2007. Samples will be collected during the following periods:

1. Feb-Mar (1 time): after ice breakup, initial post-winter condition
2. April (1 time): initial rise of snowmelt hydrograph, low and mid-elevation runoff
3. May (2 times): rising limb of hydrograph, mid and high-elevation runoff
4. June (2 times): near peak of hydrograph and start of falling limb
5. July (1 time): falling limb of hydrograph
6. August (1 time): near minimum flow, period of maximum water temperature and biological productivity

Sample Analysis

Unless otherwise noted, laboratory analyses are performed by the USGS National Water Quality Laboratory (NWQL) in Denver, Colo. All approved analytical data are publicly accessible at http://waterdata.usgs.gov/mt/nwis . Provisional analytical results for samples collected during the current year are available electronically upon request after receipt of results from the laboratory and preliminary quality-assurance review.

Streamflow Gaging

Continuous streamflow record will be obtained at all sampling sites, except for the new site on the Swan River near Ferndale. Instantaneous streamflow at the time of sampling will be measured at that site during sampling visits; the costs for flow measurements are included in the operational costs for sampling.

Two of the streamflow-gaging stations in the upper Flathead monitoring network are funded by this program: 1) Ashley Creek at Kalispell and 2) Flathead River above Flathead Lake, near Bigfork.

Data Management and Reporting

Water-quality and streamflow data collected for this program are quality-assured and archived in the USGS NWIS database. Approved water-quality and streamflow data, as well as provisional real-time streamflow data, are available to the public at http://waterdata.usgs.gov/mt/nwis. Provisional water-quality data prior to final approval are available for inspection upon request. The water-quality and streamflow data will be published in the report "Water Resources Data for Montana" (published annually).

Cost

Original Scope of Work

The cost for startup and data collection during the period of the original agreement (February-June 2007) is **$110,000**. Matching funds of 40 percent were provided by the USGS. A summary of the costs for the original agreement is shown below:

OPERATIONAL:	
Gage installations (2 sites, one-time cost):	$27,000
Gage operations (2 sites, Mar-June):	$10,000
Sample collection, data management (8 sites)	$61,000
LABORATORY:	$12,000
TOTAL	**$110,000**
DEQ share (60%)	**$66,000**
USGS share (40%)	**$44,000**

Additional work for revised program

A summary of costs for the additional tasks included in the extension of the program through September 2007 is shown below:

OPERATIONAL:	
Gage operations (2 sites, July-Sept)	$7,000
Sample collection, data management (2 samples at 8 sites)	$23,330
Sample collection, data management (4 samples at 1 site)	$5,820
Streamflow measurements (4 measurements at 1 site)	$ 500
LABORATORY:	$7,700
TOTAL	**$44,350**

For the additional work included in the extension of the monitoring program, the USGS can provide matching funds of 40%. ***The following amounts are to be added to the current Joint Funding Agreement:***

DEQ share (60%)	**$26,610**
USGS share (40%)	**$17,740**

GRAND TOTAL FOR REVISED PROGRAM

The total cost for the revised monitoring program in the amended Joint Funding Agreement for the period **February 1 through September 30, 2007** is:

GRAND TOTAL	**$154,350**
DEQ share (60%)	**$92,610**
USGS share (40%)	**$61,740**

SITE VISITS FOR
FLATHEAD SAMPLING PROGRAMS: 2007
****** Revised May 2007 ******

(X = DEQ O = USGS/NPS Y = DNRC)

STATION	WY07									WY08 (Planned)		
	J	F	M	A	M	J	J	A	S	O	N	D
NF Flathead at Border			X O	X O Y	XX O	XX O Y	X O Y	X O Y	O	X		X O
NF Flathead nr Col. Falls			X	X	XX O	XX O	X	X O	O	X		X
MF Flathead nr W.Glacier			X	X	XX	XX	X	X		X		X
SF Flathead nr Col. Falls			X	X	XX	XX	X	X		X		X
Flathead at Col. Falls				Y		Y	Y	Y				
Stillwater R. at Kalispell			X	X	XX	XX	X	X		X		X
Whitefish R. at Kalispell			X	X	XX	XX	X	X		X		X
Ashley Cr. at Kalispell			X	X	XX	XX	X	X		X		X
Flathead R. nr Bigfork			X	X	XX	XX	X	X		X		X
Swan R. near Ferndale						XX	X	X		X		X